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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,963	10/21/2003	Ekkehart-Peter Wagner	071308.0476	4473

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EXAMINER	
PATEL, DHARTI HARIDAS	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/689,963	WAGNER, EKKEHART-PETER	
	Examiner	Art Unit	
	Dharti H. Patel	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/21/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poor et al., Patent No. 5,211,820, in view of Aono, Patent No. 4,046,118. With respect to claim 1, Poor teaches a circuit arrangement [Fig. 7] for operating a sensor, in particular, a circuit arrangement for a linear exhaust gas sensor [Fig. 7, 55] for an internal combustion engine [Col. 1, lines 13-20], comprising a control circuit [Fig. 1, 20] that is designed to electrically supply the sensor [Fig. 7, 55] via a plurality of connecting lines [Fig. 7, 78a, 78b] and/or at least to detect one electrical output signal of the sensor in which case one of the connecting line is routed via one actuatable switching element [Fig. 7, 108a, 108b, Col. 16, lines 16-19] that is suited to interrupt this line, and in which case the circuit arrangement is designed to detect the potential on at least one of the connecting lines and, should an abnormal potential be detected on this connecting line, to actuate the switching element for interrupting the connecting line [Col. 16, lines 19-25]. However, Poor does not disclose at least one actuatable further switching element that is suitable for connecting a pair of the connecting lines.

Aono teaches an air-fuel mixture control apparatus for carbureted internal combustion engine. Aono teaches at least one actuatable further switching element [Fig. 5, D1, D2] that is suitable for connecting a pair of the connecting lines, wherein the circuit arrangement is designed in such a way that it can actuate the connection of these connecting lines should an abnormal potential of this further switching element be detected to break down a potential difference between the connections of the sensor [Col. 4, lines 46-58]. It would have been obvious to one of ordinary skill in the art to substitute the diodes D1 and D2 with functionally equivalent transistor switches for the benefit of controlling the exact turn on time and threshold level of said switches.

Both teachings are analogous sensing circuits for exhaust gas sensors (or oxygen sensors) for automotive engines. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Aono, which teaches at least one actuatable further switching element, with the circuit arrangement of Poor for the benefit of protecting the sensing circuitry from possible damage due to over-voltages or transients, such as suggested by Poor, Col. 16, lines 23-25 and Aono, Col. 4, lines 56-58.

With respect to claim 2, Poor teaches that a number of the connecting lines [Fig. 7, 78a, 78b] are routed via a switching element [Fig. 7, 108a, 108b] that can be actuated and that is suitable for interrupting the relevant connecting line and, should an abnormal potential be detected, these switching elements are

at the same time actuated to interrupt the relevant connecting lines [Col. 16, lines 16-25].

With respect to claim 3, Aono teaches that an actuatable further switching element [Fig. 5, D1, D2] is provided in each case between a number of pairs of the connecting lines that is suitable for connecting the corresponding connecting lines in pairs, and should an abnormal potential be detected, these further switching elements are at the same time actuated to connect the relevant connecting lines [Col. 4, lines 46-58].

With respect to claim 4, Aono teaches that at least one of the further switching elements [Fig. 5, D1, and D2] can be operated wattless to connect the two connecting lines [The diodes generally do not dissipate significant wattage when turning on/conducting. Additionally, low power diodes that dissipate little or no power can easily be substituted here]. Furthermore, the following claim language "the further switching elements can be operated" can be interpreted as a statement of capability of performing an action, and not necessarily as a concrete statement of intended purpose.

With respect to claim 5, Aono teaches diodes [Fig. 5, D1, D2] as further switching elements. The diodes generally do not dissipate significant wattage when turning on/conducting. Additionally, low power diodes that dissipate little or no power can easily be substituted here. Furthermore, the following claim language "the further switching elements can be operated" can be interpreted as

a statement of capability of performing an action, and not necessarily as a concrete statement of intended purpose.

With respect to claim 6, Aono teaches that at least one of the further switching elements [Fig. 5, D1, and D2] is actuated to connect the two connecting lines by means of an actuating circuit [Fig. 5, 19] which provides an actuating potential for actuating purposes and is applied to a control input of the switching element, and in which case this actuating circuit is connected to a number of connecting lines to be supplied with the abnormal potential when an abnormal potential occurs on one of these connecting lines [Col. 3, lines 25-28, the detector detects an abnormal voltage and sends a control signal to the actuating switches].

With respect to the limitation that the control circuit as well as the switching elements and further switching elements are united in an integrated circuit in claim 7, one of ordinary skilled in the art can easily combine solid state switches into a single integrated circuit for all the benefits that are well known such as compactness, ease of replacement, reduced cost, fewer component count, enhance reliability, etc.

With respect to claim 8, Poor teaches a method for operating a sensor, in particular, a linear exhaust gas sensor [Fig. 7, 55] for an internal combustion engine [Col. 1, lines 13-20], comprising the steps of supplying the sensor [Fig. 7, 55] electrically via a plurality of connecting lines [Fig. 7, 78a, 78b] and/or at least detecting one electrical output signal of the sensor in which case one of the

connecting lines is routed via one actuatable switching element [Fig. 7, 108a, 108b, Col. 16, lines 16-19 that is suited to interrupt this line, and in which case the circuit arrangement is desired to detect the potential on at least one of the connecting lines and, should an abnormal potential be detected on this connecting line, actuating the switching element for interrupting the connecting line [Col.. 16, lines 19-25]. However, Poor does not disclose actuating the connection of a pair of connecting lines via an actuatable further switching element.

Aono teaches an air-fuel mixture control apparatus for carbureted internal combustion engine. Aono teaches actuating the connection of a pair of connecting lines via an actuatable further switching element [Fig. 5, D1, D2] should an abnormal potential of this further switching element be detected to break down a potential difference between the connections of the sensor [Col. 4, lines 46-58]. It would have been obvious to one of ordinary skill in the art to substitute the diodes D1 and D2 with functionally equivalent transistor switches for the benefit of controlling the exact turn on time and threshold level of said switches.

Both teachings are analogous sensing circuits for exhaust gas sensors (or oxygen sensors) for automotive engines. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Aono, which teaches at least one actuatable further switching element, with the circuit arrangement of Poor for the benefit of protecting the

sensing circuitry from possible damage due to over-voltages or transients, such as suggested by Poor, Col. 16, lines 23-25 and Aono, Col. 4, lines 56-58.

With respect to claim 9, Poor teaches a method wherein a number of the connecting lines [Fig. 7, 78a, 78b] are routed via a switching element [Fig. 7, 108a, 108b] that can be actuated and that is suitable for interrupting the relevant connecting line and, should an abnormal potential be detected, these switching elements are at the same time actuated to interrupt the relevant connecting lines [Col. 16, lines 16-25].

With respect to claim 10, Aono teaches a method further comprising the step of providing an actuatable further switching element [Fig. 5, D1, D2] in each case between a number of pairs of the connecting lines that is suitable for connecting the corresponding connecting lines in pairs, and should an abnormal potential be detected, actuating these further switching elements are at the same time to connect the relevant connecting lines [Col. 4, lines 46-58].

With respect to claim 11, Aono comprises the step of operating at least one of the further switching elements [Fig. 5, D1, and D2] wattless to connect the two connecting lines [The diodes generally do not dissipate significant wattage when turning on/conducting. Additionally, low power diodes that dissipate little or no power can easily be substituted here].

With respect to claim 12, Aono teaches a method that comprises the step of actuating at least one of the further switching elements [Fig. 5, D1, and D2] to connect the two connecting lines by means of an actuating circuit [Fig. 5, 19]

which provides an actuating potential for actuating purposes and is applied to a control input of the switching element, and in which case connecting this actuating circuit to a number of connecting lines to be supplied with the abnormal potential when an abnormal potential occurs on one of these connecting lines [Col. 3, lines 25-28, the detector detects an abnormal voltage and sends a control signal to the actuating switches].

With respect to claim 13, Poor teaches a circuit arrangement [Fig. 7] for a linear exhaust gas sensor [Fig. 7, 55] for an internal combustion engine [Col. 1, lines 13-20], comprising a control circuit [Fig. 1, 20] for electrically supplying the sensor via a plurality of connecting lines [Fig. 7, 78a, 78b] and/or at least for detecting one electrical output signal of the sensor, a first actuatable switching element [Fig. 7, 108a, 108b] controlled by the control circuit for routing one of the connecting lines. However, Poor does not disclose a detector for detecting the potential on at least one of the connecting lines and a second switching element for connecting a pair of the connecting lines.

Aono teaches a detector [Fig. 1, Fig. 5, 19, Col. 3, lines 25-28] for detecting the potential on at least one of the connecting lines coupled with the first switching element for actuating the switching element for interrupting the connecting line, and a second switching element [Fig. 5, D1, D2] for connecting a pair of the connecting lines, wherein the circuit arrangement controls the connection of the connecting lines in response to a detected abnormal potential of the second switching element be detected to break down a potential difference

between the connections of the sensor [Col. 4, lines 46-58]. It would have been obvious to one of ordinary skill in the art to substitute the diodes D1 and D2 with functionally equivalent transistor switches for the benefit of controlling the exact turn on time and threshold level of said switches.

Both teachings are analogous sensing circuits for exhaust gas sensors (or oxygen sensors) for automotive engines. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Aono, which teaches a detector and a second switching element, with the circuit arrangement of Poor for the benefit of protecting the sensing circuitry from possible damage due to over-voltages or transients, such as suggested by Poor, Col. 16, lines 23-25 and Aono, Col. 4, lines 56-58.

With respect to claim 14, Poor teaches that a number of the connecting lines [Fig. 7, 78a, 78b] are routed via a switching element [Fig. 7, 108a, 108b] that can be actuated and that is suitable for interrupting the relevant connecting line and, should an abnormal potential be detected, these switching elements are at the same time actuated to interrupt the relevant connecting lines [Col. 16, lines 16-25].

With respect to claim 15, Aono teaches that an actuatable further switching element [Fig. 5, D1, D2] is provided in each case between a number of pairs of the connecting lines that is suitable for connecting the corresponding connecting lines in pairs, and should an abnormal potential be detected, these

further switching elements are at the same time actuated to connect the relevant connecting lines [Col. 4, lines 46-58].

With respect to claim 16, Aono teaches that at least one of the switching elements and/or further switching elements are designed as a channel of a transistor [PN junction of a diode (Fig. 5, D1, D2) is functionally equivalent to the pn junction of a transistor under certain operating conditions].

With respect to claim 17, Aono teaches that at least one of the further switching elements [Fig. 5, D1, and D2] can be operated wattless to connect the two connecting lines [The diodes generally do not dissipate significant wattage when turning on/conducting. Additionally, low power diodes that dissipate little or no power can easily be substituted here]. Furthermore, the following claim language "the further switching elements can be operated" can be interpreted as a statement of capability of performing an action, and not necessarily as a concrete statement of intended purpose.

With respect to claim 18, Aono teaches that at least one of the further switching elements [Fig. 5, D1, and D2] is actuated to connect the two connecting lines by means of an actuating circuit which provides an actuating potential for actuating purposes and is applied to a control input of the switching element, and in which case this actuating circuit is connected to a number of connecting lines to be supplied with the abnormal potential when an abnormal potential occurs on one of these connecting lines [Col. 3, lines 25-28, the

detector detects an abnormal voltage and sends a control signal to the actuating switches].

With respect to the limitation that the control circuit as well as the switching elements and further switching elements are united in an integrated circuit in claim 19, one of ordinary skilled in the art can easily combine solid state switches into a single integrated circuit for all the benefits that are well known such as compactness, ease of replacement, reduced cost, fewer component count, enhance reliability, etc.

Conclusion

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dharti H. Patel whose telephone number is 571-272-8659. The examiner can normally be reached on 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800, Ext. 36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DHP
04/24/2006

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